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In re Application of:
Kholodenko, et al.§
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§ Group Art Unit: 3742

Serial No.: 10/692,901

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Confirmation No.: 8712

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Docket No.: 4118C01/ETCH/ECT

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Filed: October 24, 2003

For: ACTIVELY CONTROLLED
ELECTROSTATIC CHUCK
HEATERMail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

CERTIFICATE OF TRANSMISSION UNDER 37 C.F.R. §1.8

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8/13/04

Kholodenko

Signature

Sir:

DECLARATION IN SUPPORT OF NON-OBVIOUSNESS

I, Arnold Kholodenko, hereby declare that:

1. I am an inventor of the above-identified patent application and an employee of Applied Materials, Inc., the assignee of the present patent application.
2. I have a MS degree in Flight Mechanics and Control Systems from Perm Technical University, Russia, and a Ph.D. degree in Aerospace Engineering from Moscow Aviation Institute, Russia. I have worked in the field of semiconductor processing equipment for 10 years. I currently am employed at Applied Materials, Inc. as a Director/Distinguished Member of Technical Staff, a position I have held for 7 years.
3. A significant unexpected advantage obtained by the temperature control apparatus of the present invention is improved process control due to reduced chamber

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ground leakage from the pedestal wiring. It was found that the elimination of the wiring and conductors, needed for temperature sensing in the prior art, reduced ground leakage from the chamber through the pedestal. The reduction in ground leakage increases processing performance and enables processes having critical dimensions to be processed more predictably with greater wafer to wafer uniformity.

4. The invention provides a significant number of additional advantages over the state of the art. The invention allows for the use of existing parts (i.e., wiring for driving the heater element) to also function as a sensing instrument, thereby reducing the number of parts in the pedestal. The reduced number of parts not only provides a cost savings, it additionally increases the sectional area for other conduits utilized for routing utilities between pedestal and the exterior of the chamber. This extra sectional area directly attributable to the invention is important due to the premium for space in semiconductor processing systems. Moreover, the utilization of a single conductor for both sensing and driving the heater reduces the complexity of the pedestal assembly and simplifies the passages formed in the pedestal. The reduced complexity and elimination of holes has a significant impact on the material and fabrication costs of the pedestal. Moreover, the reduced wiring components afforded by the invention as a extends the reliability of the pedestal, which is critical given the nature of the cost of replacement parts and lost process throughput associated with systems failure and down time for service and preventative maintenance, particularly as compared to prior art systems having independent sensing and power components and wiring.

As the person signing below, I hereby declare that all statement made herein are of my own knowledge and are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

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Full name of inventor: Arnold Kholodenko

Inventor's signature: Arnold Kholodenko

Date: 7/23/04

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